

Notice of Allowability

Application No.

09/955,672

Examiner

Taylor Victor Oh

Applicant(s)

MOORE ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/20/04.
2. ☒ The allowed claim(s) is/are 1, 4-13, 20-69 as renumbered in claims 1-61.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 10/1/04.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Cecilia J. Tsang
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Supervisory Patent Examiner
Technology Center 1600

Examiner's Amendment and Reasons of Allowance

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with an attorney of record, Mr. Duane A. Stewart on 10/1/2004 .

I. The application has been amended as follows:

In claim 1, line 1 on page 2 (a preliminary amendment on 7/20/04):

The term "--production --" after the word " the " has been deleted and replaced with " purification " .

II. The following is an examiner's statement of reasons for allowance:

- The objection of claims 13,16, 18, and 59 for the minor informalities has been withdrawn due to the modification made in the amendment ;

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- The rejection of claim 33 under 35 USC 112, second paragraph, has been withdrawn due to the modification made in the amendment;
- The close references for the current invention are Hartmann (U.S. 3,160,641) and Feldmann et al (U.S. 4,564,692).

Hartmann discloses a process of preparing isosorbide by the acid catalyzed dehydration product of sorbitol in the presence of an acid dehydration catalyst, such as sulfuric acid at a temperature of from 75 to 124⁰ C, and then distilling the reaction mixture to recover isosorbide at low pressures at a temperature of from 124 to 150⁰ C.

Feldmann et al teaches a process of purifying the anhydro sugar alcohols by crystallization from a concentrated solution. Furthermore, all aqueous anhydro sugar alcohol solutions with a suitable concentration have been obtained from acid-catalyzed dehydration of hexitols with strongly acidic cationic exchange resins; the crystalline anhydro sugar alcohols can be separated from the mixture by centrifugation or filtration. In addition, if the heavy liquors contain two or more different anhydro sugar alcohols, it is possible to use fractional crystallization in succession in order to produce the pure crystalline form; also, it is advisable to conduct the crystallization process at a temperature of from 20 to 65⁰ C.

The instant invention differs from the prior art in that the claimed process is conducted in the absence of any solvents; the claimed solid acid catalyst is an acidic

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zeolite powder; the vacuum distillation is conducted at a temperature of from 160 to 170⁰ C; the acidic ion exchange resin is added in an amount of from 0.01 to 0.15 gram equivalents to sugar alcohol; the period is from 30 to 45 minutes during the cooling; there is no step of adding seed crystals in the claimed process ; furthermore, there is no motivation to combine Hartmann and Feldman , thereby being unable to arrive at the claimed invention because Feldman considers Hartmann as the process for removing of impurities by complexing them with the borate ion before distillation and failing to give a product of sufficient purity. In addition, unless all limitations of the claims are met, there is no prior art rejection. See In re Zurko 59 USPQ 2d 1690 (Fed Cir. 1991) and In re Lee, 61 USPQ 1430 (Fed Cir. 1991).

Therefore, the claimed invention would not have been obvious to the person with an ordinary skill in the art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning the communication after allowance such as sending all post-allowance correspondence should be directed to " Box Issue Fee" or faxed directly to PUBS at 703-305-8755. This will expedite the process of these papers.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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10/11/04

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